

UNITED STATES ARMY - BAYLOR UNIVERSITY
GRADUATE PROGRAM IN HEALTHCARE ADMINISTRATION

**INCORPORATING UTILIZATION MANAGEMENT
INTO THE AEROMEDICAL EVACUATION PROCESS
AT THE 121ST GENERAL HOSPITAL
SEOUL, KOREA**

**A GRADUATE MANAGEMENT PROJECT IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR A MASTERS
DEGREE IN HEALTHCARE ADMINISTRATION**

BY

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ABSTRACT

The aeromedical evacuation process is extremely complicated. It is the primary system used to refer and transport military patients and their attendants for medical care and involves many people and overlapping systems. At the 121st General Hospital in Seoul, Korea the aeromedical evacuation system is used routinely for the referral of patients for care that it is unable to provide. Many opportunities for improvement have been identified in the aeromedical evacuation process concerning costs, quality of care, and administrative procedures. This project takes a multidisciplinary approach to analyze the process and makes recommendations to improve it. The approach incorporates the elements of utilization management throughout the process. Qualitative tools such as flowcharts and a cause and effect diagram have been used to analyze the process along with extensive data collection from the patient administration and resource management divisions.

This project shows how to incorporate utilization management into the process and serves as an example that can be used throughout the military health system. It also identifies specific metrics that can be used to evaluate and monitor the aeromedical evacuation process to ensure quality patient care is delivered in a cost conscious environment.

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CHAPTER ONE

INTRODUCTION

CONDITIONS WHICH PROMPTED THE STUDY

The 121st General Hospital, located in Seoul, Korea, is the premier tertiary care level medical treatment facility (MTF) for all the United States (U.S.) armed forces assigned to the Republic of Korea and throughout the Far East. The hospital also treats noncombatants such as retirees, U.S. Embassy personnel, Department of Defense (DoD) civilians, Department of Defense Dependent School (DoDDS) personnel, and family members. Patients are referred to the 121st General Hospital from Japan, China, Thailand and other countries as well as the Korean peninsula. The mission statement for the 121st General Hospital is to provide primary care, inpatient and outpatient specialty care and ancillary services to authorized military and civilian personnel under conditions of armistice and hostilities. The vision statement for the 121st General Hospital is to take care of the patient and to take care of each other (121st General Hospital, 1998). The 121st General Hospital is the most far forward deployed fixed MTF in the world. It is a 75 bed facility, but has the capability to expand to a 476 bed field medical unit in a wartime scenario. This makes it unique compared to many other hospitals.

The 121st General Hospital is part of the 18th Medical Command (MEDCOM) which has command and control over all the medical assets for the U.S. Army in Korea. The 18th MEDCOM serves a total population of approximately 80,000 people (United States Forces Korea and Eighth U.S. Army, 1997). There are 11 U.S. Army health clinics located throughout the peninsula which routinely refer patients to the 121st General Hospital. The Commander of the 121st General Hospital is dual-hatted, commanding both the hospital and the 18th MEDCOM. In both of these command roles, he strongly encourages physicians from the outlying clinics to refer patients to the 121st General Hospital if there is any uncertainty about the appropriateness of care for the patient. The physicians at the 121st General Hospital consistently confer with physicians at the outlying clinics about patients. The New Provider's Course is required for all of the new health care providers arriving in Korea. In this course, providers are told how to refer patients to the 121st General Hospital and many questions are answered at this time. As part of the New Provider's Course, the Chief, Patient Administration Division, provides a briefing specifically on the aeromedical evacuation system and how it works in Korea.

The following clinical services listed in Table 1 are provided at the 121st General Hospital:

Table 1

121st General Hospital Clinical Services

Anesthesiology	Ophthalmology/Optometry
Audiology	Otolaryngology
Dermatology	Oral Surgery
Emergency Medicine	Orthopedics/Podiatry
General Surgery	Pathology, Clinical and Anatomical
Gastroenterology	Pediatrics
Family Practice	Physical Medicine
Internal Medicine	Physical Therapy
Inhalation Therapy	Psychology
Mental Health	Pharmacy
Neurology	Pulmonary Functions
Neurosurgery	Radiology
Nutrition Care	Social Work/Alcohol Treatment
Occupational Therapy	Speech Pathology
Obstetrics/Gynecology	Urology

At times, there is the need to send patients to another MTF due to various circumstances to include medically necessary treatment unavailable at the 121st General Hospital; requirements for a Medical Evaluation Board (MEB) or a Physical Evaluation Board (PEB); or hospitalization beyond 60 days. This is where the aeromedical evacuation process becomes involved. Since the 121st General Hospital is located in the Far East, patients must be sent by air to receive more definitive care. Patients are usually sent to MTFs in Japan, Hawaii, or the continental United States (CONUS). Most of the patients are referred to Tripler Regional Medical Center (TRMC) in Hawaii (18th MEDCOM Resource Management, 1997).

There was very limited utilization management of patients referred from the 121st General Hospital via the aeromedical evacuation system. In a September 1997 memorandum to the 121st General Hospital Executive Committee (EXCOM) from the Commander, it stated that there was no case management; no system of cost control; no records in the Patient Administration Division documenting the selection of evacuation location; no multidisciplinary concurrence on medically necessary treatment; and no utilization review process in place for medical appropriateness of aeromedical evacuations (121st General Hospital, 1997).

In fiscal year (FY) 1997, the Patient Administration Division reported a total of 327 inpatients and 158 outpatients who were aeromedically evacuated from the 121st General Hospital. The total expenditures for patient and attendant travel during FY 1997 were approximately \$241,000 as reported by the 18th MEDCOM Resource Management Division. Incidences that have drawn attention to the aeromedical evacuation process have involved the referral of active duty patients. When these patients are aeromedically evacuated on an outpatient status, their travel and per diem costs are paid for by the organizational unit to which they are assigned (Aeromedical Evacuation Policy, 121st General Hospital, 1997). In FY 1997, a total of \$55,000 in travel

and per diem costs was spent by these organizational units according to the 18th MEDCOM Resource Management Division.

An example of family member aeromedical evacuation involves pediatric inpatients who are sent from the 121st General Hospital to medical centers in CONUS. The patients are usually accompanied by one or both parents as non-medical attendants (NMAs). In most cases, the patient and family are evacuated to treatment centers near the family member's home of record for personal reasons. The 18th MEDCOM is responsible for the commercial travel and per diem costs associated with these aeromedical evacuation cases.

The use of medical and non-medical attendants cannot be ignored when discussing the aeromedical evacuation system. The primary provider who is caring for the patient determines if attendants are needed during the aeromedical evacuation process and, if so, how many as well as the qualifications required for the attendants. Medical attendants may be physicians, registered nurses, licensed practical nurses, medical assistants, psychiatry technicians or respiratory technicians (Aeromedical Evacuation Policy, 121st General Hospital, 1998). Depending on the situation, a non-medical attendant, such as the parent of a pediatric patient, may be required to accompany the patient. All medical and non-medical attendants will have travel and per diem costs funded by the 18th MEDCOM (18th MEDCOM Resource

Management, 1995). These costs make up 53% of the aeromedical evacuation total costs (18th MEDCOM Resource Management, 1997). Table 2 shows the travel cost categories incurred by the 18th MEDCOM and by the individual units.

Table 2.

Aeromedical Evacuation Cost Categories

18th MEDCOM Cost Categories
All family member travel
All attendant travel
Active duty sent as inpatients whose status is changed to outpatients at the referral center
All 18 th MEDCOM personnel sent as outpatients
Units/Other Cost Categories
Active duty sent as outpatients
Active duty sent for medical or physical evaluation boards (MEB, PEB)

The 121st General Hospital coordinates all patients for aeromedical evacuation with the 374th Aeromedical Evacuation Squadron (AES) at Yokota, Air Force Base, Japan which is responsible for all aeromedical movements in the Pacific region. The primary aircraft used is the C-9A Nightingale, a specially modified McDonnell Douglas DC-9, with a maximum capacity of 40 litter or ambulatory patients. The configuration can vary based on patient requirements. The crew consists of specially trained flight nurses and medical technicians (Cramer B., personal communication, December 14, 1997).

There are other alternatives to providing care that is not available at the 121st General Hospital rather than aeromedical evacuation. One is to use supplemental care and refer the patient to a Korean civilian hospital. Depending on the patient needs, this sometimes may be the most reasonable. It is most commonly used for radiology procedures that can be done on an outpatient basis in one day or less, according to the Chief, Radiology (G.S. Vincent, personal communication, December 8, 1997). Due to cultural differences, language barriers and different standards of care, this is not the alternative of choice for most patients as indicated by the Deputy Chief of Clinical Services (K. Torrington, personal communication, December 9, 1997). Occasionally military medical specialists from other military hospitals are brought to the 121st General Hospital to treat certain patients. This usually depends on the type and number of patients and the availability of the specialists. Although these alternatives are available, most patients are referred to other MTFs through the aeromedical evacuation system (T. Green, personal communication, April 13, 1998).

STATEMENT OF THE PROBLEM

There was limited utilization management (UM) of the aeromedical evacuation process at the 121st General Hospital. The Commander, 121st General Hospital, identified deficiencies that included no case management, no system of cost control, no records in Patient Administration documenting the selection of evacuation location, no multidisciplinary concurrence on medically necessary treatment and no utilization review process for medical appropriateness of evacuations. This project will make recommendations to answer the following question: How to incorporate utilization management into the aeromedical evacuation process?

LITERATURE REVIEW

The aeromedical evacuation process in the military is very complex, involving many overlapping organizations and systems to include the Army and Air Force medical personnel. The process is nearly always in transition, with military downsizing, regulation revisions, tri-service medical care changes and the use of new computer technology (Ritchie, Morse, and Brewer, 1996). Being overseas in a country such as Korea, with approximately 37,000 American troops and 11 outlying clinics throughout the peninsula (United States Forces Korea, Organization, 1997) complicates the process

even more. The aeromedical evacuation process needs to be thought of as an extended network of health care providers in which utilization management must be incorporated and maintained throughout the system.

The literature shows that UM has played a major role in the delivery of health care and is now an integral part of most public and private health plans. Bailit and Sennett (1991) found that UM can make a significant contribution both to managing health care costs and to assessing the value of health services in improving health. Utilization management as described by Tischler (1990) is "a mechanism for managing health care costs by assessing the appropriateness of care and influencing decisions about its provision to ensure the least costly, but most effective treatment. Thus while primarily focused on reducing costs, UM also affects the quality of care."

Guidelines and standards set forth by the Department of Defense (DoD), Office of the Assistant Secretary of Defense, Health Affairs (ASD(HA)) (1996) state that UM is an important link between the delivery of health services and accomplishment of an overall process of quality and performance improvement. The following goals and objectives are outlined in the DoD UM Policy:

Goals:

- Maximize appropriate care and minimize/eliminate inappropriate care (under-utilization or over-utilization)
- Limit annual medical inflation to less than the National Medical Consumer Price Index Rate

Objectives:

- Maximize beneficiary health outcomes:
 - return to duty/work
 - alleviate acute symptoms
 - improve/restore function
 - increase self care
 - improve satisfaction with services
- Minimize/eliminate:
 - inappropriate level of care
 - inappropriate admissions
 - inappropriate stays
 - inappropriate procedures
 - inappropriate discharges
 - inappropriate outpatient utilization
 - inappropriate delays in care/service.

The DoD UM Policy (1996) delineates key elements that are imperative to provide a basic foundation for evaluation of care and services, and the development of clinical practices such as clinical pathways and clinical outcome

studies for the aeromedical evacuation process. Three significant key elements are:

- Utilization Review
- Case Management
- Discharge Planning.

Utilization Review. As defined in the DoD UM Policy, Utilization Review (UR) is a systematic evaluation of the necessity, appropriateness, and efficiency of the use of health care services, procedures and facilities. It includes reviews and evaluations of the following:

- Prospective: proposed admission or course of treatment
- Concurrent: care while it is being provided
- Retrospective: care after it is provided

It has been found that UR has a positive effect in the containment of health care costs. The results of a study conducted by Feldstein, Wickizer and Wheeler (1988) suggest that UR significantly reduces hospital use and total medical expenditures. It resulted in decreased admissions, inpatient days, and hospital expenditures. An evaluation of the Aetna Insurance Company's onsite concurrent review program by Smith and Gotowka (1991) demonstrated reduced utilization and expenses, especially for ancillary services, and no adverse effects on rates of medical complications.

Khandker and Manning (1992) found that UR reduced inpatient costs significantly, primarily from reduced lengths of stays, and that savings from UR outweighs the costs of administering the program. Tan, McCormick and Sheps (1993) found that in order for UR to be meaningful and successful there must be effective data communication. The data gathered must be relevant, accurate, timely, accessible and coordinated. The data needs to be disseminated to the responsible departments as error-free and straightforward as possible. Data gathering is often stymied by the absence of critical data elements which often results in unreliable, inaccurate, and incomplete information. This can lead to the development of ineffective and inefficient strategies to address the needs of patients.

Case Management. Case management is a collaborative process which assesses, plans, implements, coordinates, monitors, and evaluates options and services to meet complex health needs through communication and available resources to promote quality, cost effective outcomes (DoD UM Policy, 1996). It has been found that UR can be expanded to include case management in activities such as scheduling patient appointments and tests, identifying system issues and assisting with the development and monitoring of care pathways (Quick, 1994). Case management should be a process that involves group decisions from a health care team

consisting of the physician, the patient and the case manager. The case manager should offer the physician and patient alternatives that are more efficient yet still fulfill the patient's needs. The team needs to discuss the appropriateness of the patient's perceived needs. The patient and the physician must be made aware of the cost benefits of each treatment alternative because not everything that is "a good idea" is appropriate or efficient in the care of the patient (Trentalance, 1995).

One way to ensure effective case management is to develop clinical pathways. A clinical pathway is a comprehensive, multidisciplinary plan to coordinate, treat and monitor care for a patient population. It is a mechanism that guides the healthcare team to perform prescribed interventions. A clinical pathway never should be used in an "absolute" context; there must be flexibility to adopt other interventions depending on the changing needs of a particular patient. It can also serve as an educational tool. Healthcare personnel, patients and their families may benefit greatly from the timely, effective, and thorough educational opportunities provided by a well designed pathway (Garbin, 1995). Sprouse and Whitmore (1995) found that clinical pathways can be used to reduce variation in patient management practices, with the aim of improving the quality of care and reducing costs. An

advantage of using clinical pathways as determined by Grant, Campbell, and Gautney (1995) is the standardization of the care process, which improves quality outcomes and reduces costs.

The following steps recommended by Interqual (1997) can be used to implement case management:

- Define the characteristics of the patient population
 - High volume diagnoses
 - Average lengths of stay
 - Proportion of inpatient to outpatient
 - Population with high reliance on ancillary services
- Determine availability and accessibility of financial and clinical data
- Identify target population at risk for high resource use or predisposing factors
- Based on patient population, define the goals of the case management program
- Assess current strategies for identifying and resolving potential problems
- Identify strengths and weaknesses of current utilization review and discharge planning processes

- Develop an action plan including functions and tasks to be carried out and assign responsibility to individuals
- Work through established administrative and clinical staff committees to gain support for the program.

Effective case management requires a multidisciplinary approach that combines the traditional functions of UR and discharge planning with renewed efforts for integrated and coordinated processes. Table 3 delineates both administrative and clinical functions of case management.

Table 3

Case Management: Administrative and Clinical Functions

ADMINISTRATIVE FUNCTIONS	CLINICAL FUNCTIONS
Coordinate preadmission services	Plan patient care with physician(s), nursing, social service, discharge planners
Arrange for appropriate level of care	Orchestrate care plan with all care providers
Perform case review after admission or transfer	Evaluate patient progress towards outcome
Identify when patient can safely be transferred	Coordinate the development of post-discharge plans
Facilitate transfer to appropriate level of care	Provide education to patient, family and significant others
Collaborate/coordinate clinical pathways	Develop/implement clinical pathways
Provide data on utilization practices to hospital staff	Follow up with patient after discharge

Note. From "Continuing Care Planning and Case Management", Chapter 6, p. 126. Copyright 1994, Interqual, Inc.

Discharge Planning. Discharge planning is a process which assesses requirements to accomplish an appropriate and timely discharge from an acute care setting (DoD UM Policy, 1996). Discharge planning identifies patients who will have

post-discharge care needs and provides a planned program of continuing care to meet those needs (Hamilton, 1995). Poor discharge planning often leads to quality of care problems. Discharge planning should ideally begin on the day of admission so that adequate time is available to find an appropriate setting for the patient, to talk to the patient's family, and to develop aftercare alternatives (Goldstein, 1990). Hamilton (1995) describes a project that successfully combined the functions of UM and discharge planning. This led to decreased discharge delays and lengths of stay. It also decreased the duplication of chart reviews and the number of full-time employees required. Working relationships and communication were also improved with both internal and external customers.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Manual (1998) addresses the importance of discharge planning. The following JCAHO standards can easily pertain to patients who are aeromedically evacuated:

- the hospital ensures coordination among the health professionals and services or settings involved in a patient's care
- the hospital provides for referral, transfer, or discharge of the patient to another level of care, health professional or setting, based on the

patient's assessed needs and the hospital's capacity to provide the care

- the discharge process provides for continuing care based upon the patient's assessed needs at the time of discharge
- the hospital ensures that appropriate patient care and clinical information is exchanged when patients are admitted, referred, transferred, or discharged.

The JCAHO Manual (1998) states that referral and transfer procedures should address how responsibility is shifted between providers and settings; reasons for transfer; conditions under which transfer can occur; who has the responsibility for the patient during transfer; and the mechanisms for referral, including formal affiliations and informal arrangements. It also states that discharge planning involves the patient, the family, the practitioner primarily responsible for the patient, nursing, social work professionals and other staff.

PURPOSE

The purpose of this project is to make recommendations to improve the aeromedical evacuation process at the 121st General Hospital by incorporating the key elements of utilization management in the overall process.

CHAPTER TWO

METHODS AND PROCEDURES

This chapter discusses the methods and procedures that were used to review the aeromedical evacuation process and the collection of data that were used to evaluate the process in terms of utilization management. It will also address the analysis of the data and the limitations of this graduate management project.

DATA COLLECTION AND ANALYSIS

Data collection methodologies had to be developed since there were none in place to specifically evaluate the aeromedical evacuation process from a UM standpoint. A review of the literature yielded no articles that linked UM directly to the aeromedical evacuation process. In order to better collect information, the author went through the actual aeromedical evacuation process first hand with patients from the 121st General Hospital through Yokota Air Force Base, Japan to Tripler Regional Medical Center, the main referral center. This allowed for the interaction with patients and key individuals who work with the aeromedical evacuation process and provided the information needed to determine how to incorporate the key elements of UM (UR, case management, and discharge planning) into the process.

Types of data that were collected and analyzed are the number and diagnoses of patients who are aeromedically evacuated, the types and number of attendants used, costs, durations of stay at receiving MTFs, and the locations of the referral centers. A concurrent review of inpatients who were aeromedically evacuated during first quarter fiscal year 1998 was conducted to determine if any change of status occurred once the patient reached the referral center. Interqual criteria were used for this analysis. Interqual criteria present the most widely used tools for utilization and management of inpatient healthcare resources, appropriateness of medical and surgical diagnostics and procedures, and guidelines for physician specialty referral and injury recovery management. The criteria primarily cover the intensity of service, the severity of illness and discharge screens. The benefits of using this criteria include the admission and transfer of patients to appropriate levels of care; efficient medical decision making by using scientifically valid guidelines; and the standardization of objective, measurable parameters for consideration by payors, physicians and case managers (Jacobs and Lamprey, 1997).

A qualitative analysis of the data was conducted by using information gathered through personal interviews by the author from subject matter experts involved in the

aeromedical evacuation process. This information was used to develop a flowchart and a cause and effect diagram of the process.

LIMITATIONS OF THE STUDY

Demographic data was limited to that of patients in the aeromedical evacuation system at the 121st General Hospital. The elements of UM were applied only to this group. The literature showed a relationship between UM, cost savings and positive health outcomes which supports the validity of the project. The project supports reliability since 100% of the patients and data were from the 121st General Hospital and from subject matter experts directly involved with the aeromedical evacuation process. The major limitation was the lack of historical data available to evaluate the process. Although data was limited, data collection and metrics established by this project will be used to monitor and evaluate outcomes of UM in the aeromedical evacuation process in the future. Ethical rights of the patients were protected since individual patients were not identified through the data collection efforts for the project.

CHAPTER THREE

RESULTS AND MAJOR FINDINGS

The following data, tables and figures provide findings from the data and information that was collected and analyzed. Methodologies for the qualitative analyses were developed to specifically analyze the aeromedical evacuation process.

A concurrent review of 30 aeromedical evacuation patient records for 1st Quarter FY98 revealed that 47% of the patients who were aeromedically evacuated as inpatients did not meet the Interqual criteria for inpatient status. The review also found that 60% of these patients were converted to outpatient status at the referral center. Interviews with health care providers at the 121st General Hospital also revealed that patients were routinely admitted as inpatients for aeromedical evacuation even though they did not meet Interqual criteria for admission. The Chief of Management for the 18th MEDCOM stated that the duration of stay for patients and attendants in the aeromedical evacuation process averages 6 to 8 days. This is from the time the patient or attendant leaves Korea until they return (M. Cook, personal communication, November 4, 1997).

The total number of patients who were aeromedically evacuated for fiscal year 1997 by service is shown in Table 4. This includes both inpatients and outpatients.

Table 4

Number of Patients by Service Who Were Aeromedically Evacuated in Fiscal Year 1997

	AEROMEDICAL EVACUATIONS									
	ORTHO-	NEURO-	PEDS	PSYCH	OB/GYN	INT	GEN	EENT	UROLOGY	TOTAL
		SURG				MED	SURG			
1st Qtr FY97	21	10	2	19	1	31	8	7	8	107
2nd Qtr FY 97	12	8	2	28	2	55	9	5	5	126
3rd Qtr FY97	13	11	0	28	3	47	6	1	3	112
4th Qtr FY97	15	3	3	35	5	57	7	6	4	135
Total	61	32	7	110	11	190	30	19	20	480
	INCLUDES INPATIENTS AND OUTPATIENTS									
	SOURCE: 121 ST GENERAL HOSPITAL PATIENT ADMINISTRATION DIVISION									

Table 4 shows that psychiatric and internal medicine patients make up the majority of patients who were aeromedically evacuated in Fiscal Year 1997, 23% and 40% respectively.

Patient and Attendant Travel Costs

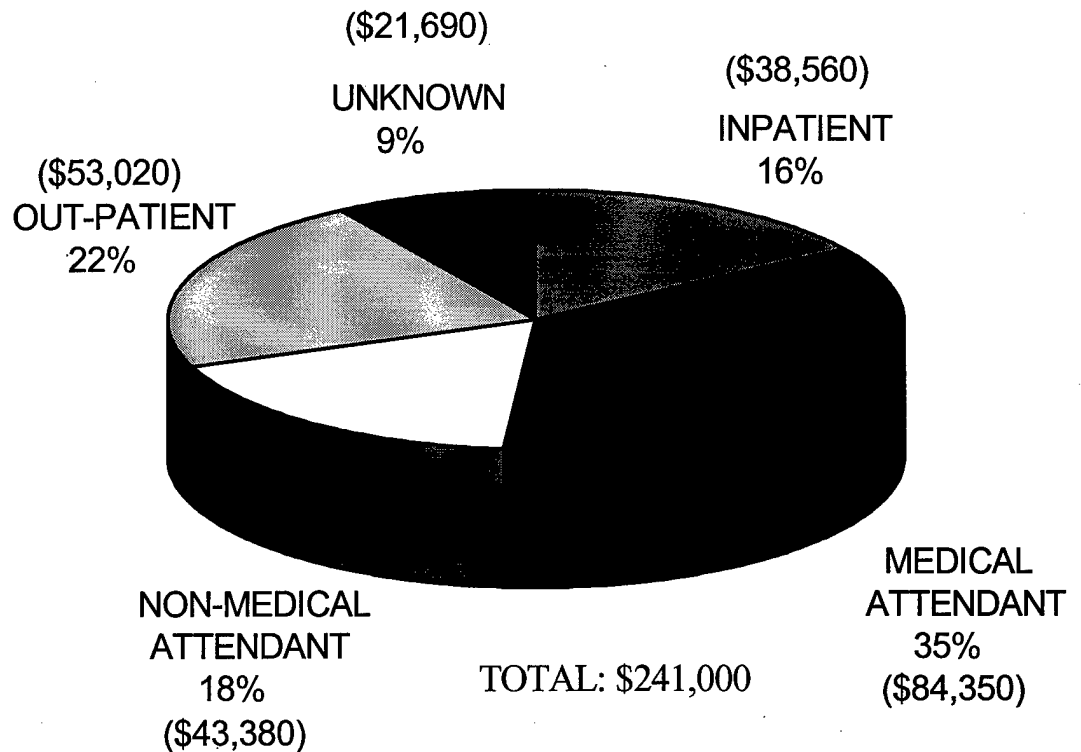


Figure 1. Aeromedical evacuation patient and attendant travel costs for Fiscal Year 1997.

As mentioned earlier, attendants are a necessary, but expensive, part of the aeromedical evacuation process. Air Force Instruction (AFI) 41-301 (1996) states the following criteria for attendants:

Non-medical attendants: One competent and able English speaking adult for patients who require psychological support or assistance in activities of daily living is allowed.

Medical Attendants: Medical attendants are provided by the referring medical facility. They will be familiar with the patient and possess the level of skills appropriate to the patient's needs. They will remain with the patient until acceptance by a physician on arrival at the patient's destination medical facility. Patients that require medical attendants are cardiac monitored patients, ventilator patients, obstetric and neuropsychiatric patients and other patients whose needs exceed the capabilities of the aeromedical evacuation crew.

Table 5

Aeromedical Evacuation Patient and Attendant Travel Costs by Location for Fiscal Year 1997.

LOCATION	COSTS	%
Tripler Regional Medical Center	\$142,190	59%
Walter Reed Army Medical Center	\$26,510	11%
Madigan Army Medical Center	\$19,280	8%
Eisenhower Army Medical Center	\$9,640	4%
Brooke Army Medical Center	\$4,820	2%
Wright Patterson Air Force Hospital	\$7,230	3%
Lester Naval Hospital (Okinawa, Japan)	\$4,820	2%
Other	\$21,690	9%
Unknown	\$4,820	2%

Table 5 indicates that Tripler Regional Medical Center accounts for the majority (59%) of the patient and attendant travel costs for the 121st General Hospital .

Air Evacuation Process Flowchart

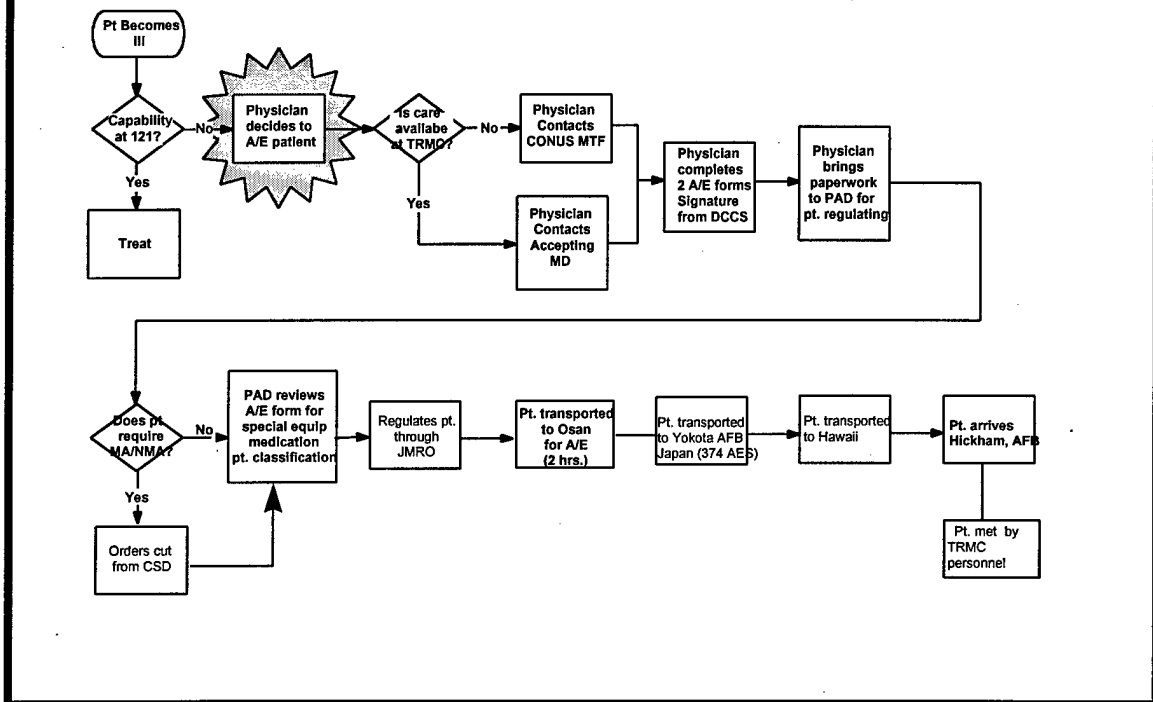


Figure 2. Flowchart of the aeromedical evacuation process at the 121st General Hospital.

This flowchart follows the patient through the aeromedical evacuation process at the 121st General Hospital and transport to Hickham Air Force Base, Hawaii where the patient is met by medical personnel from Tripler Regional Medical Center. The highlighted area is where critical decisions are made that affect the entire process. The flowchart in Figure 2 shows that the decisions made by the provider to aeromedically evacuate the patient largely determines the course of the entire process. The Deputy

Commander for Clinical Services (DCCS) ultimately approves the aeromedical evacuation request. The Patient Administration Division is responsible for the coordination with the Joint Medical Regulating Office (JMRO) at Yokota Air Force Base, Japan and ensures that appropriate travel orders are created for the patient. The Clinical Support Division is responsible for creating travel orders for the medical and /or non-medical attendant.

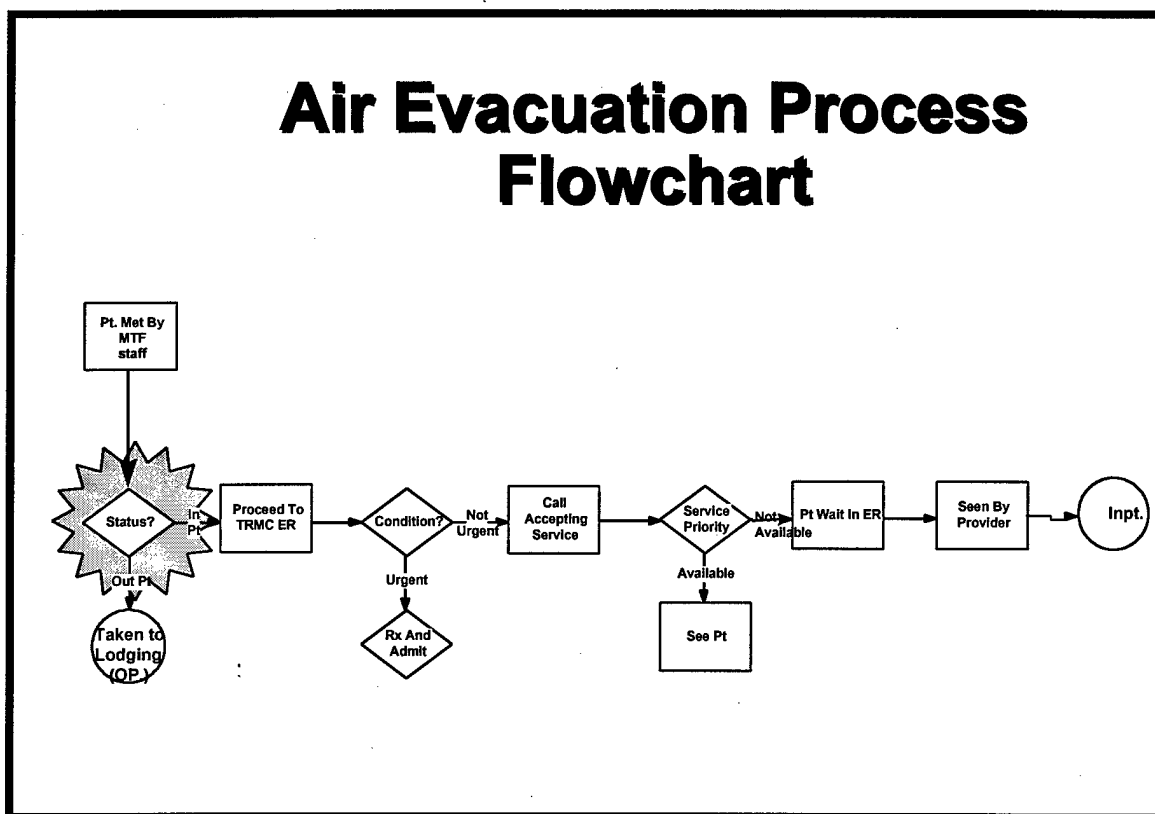


Figure 3. Flowchart showing the aeromedical evacuation process at the main referral site (TRMC).

The course of the aeromedical evacuation is quite different for an inpatient as compared to an outpatient as

shown in Figure 3. Outpatients are taken to a lodging facility and inpatients are taken to Tripler Regional Medical Center.

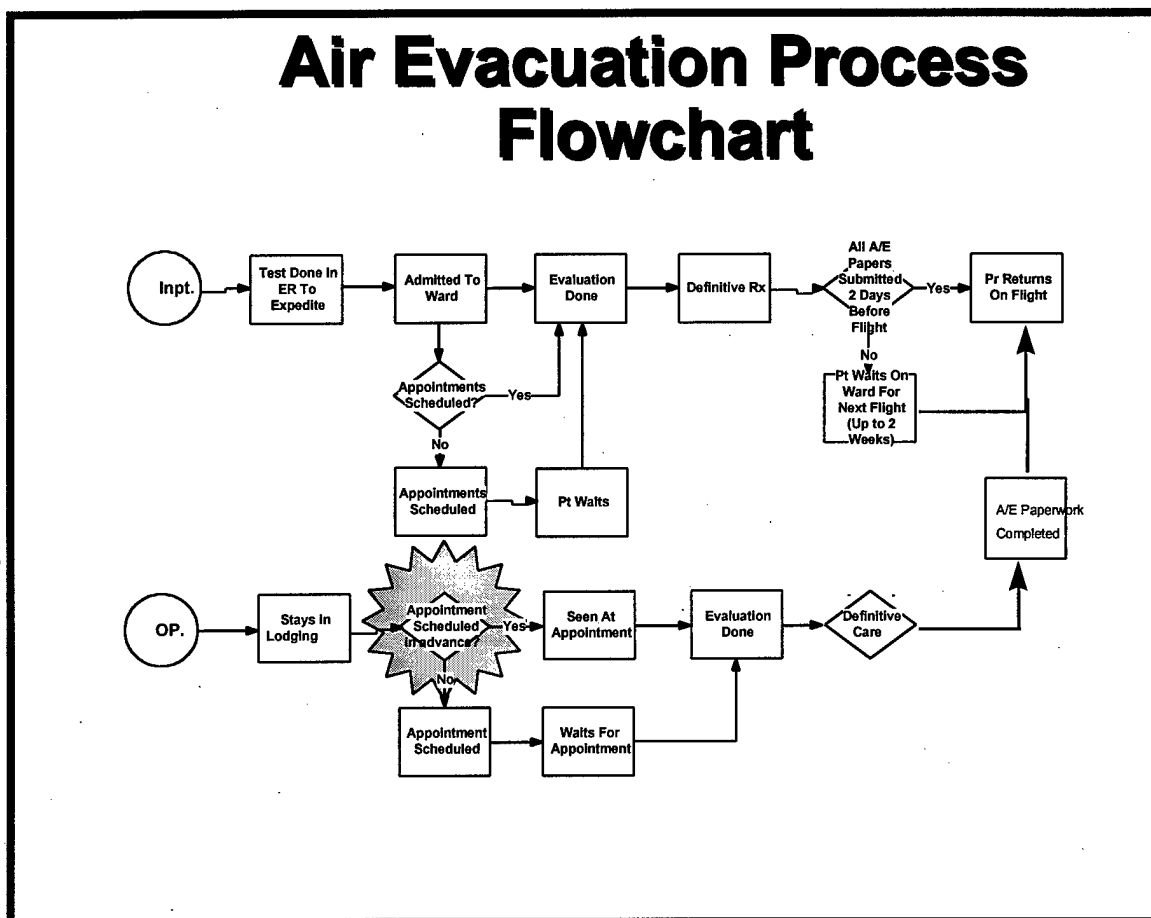


Figure 4. Flowchart of the aeromedical evacuation process for inpatients and outpatients.

Delayed, missed or changed appointments or late submission of aeromedical evacuation paperwork can cause patients a delay of two weeks for a return aeromedical evacuation flight back to Korea. Prior coordination with the attending physician is critical to ensure that patient

appointments are scheduled and prioritized to expedite the return of the patients to Korea.

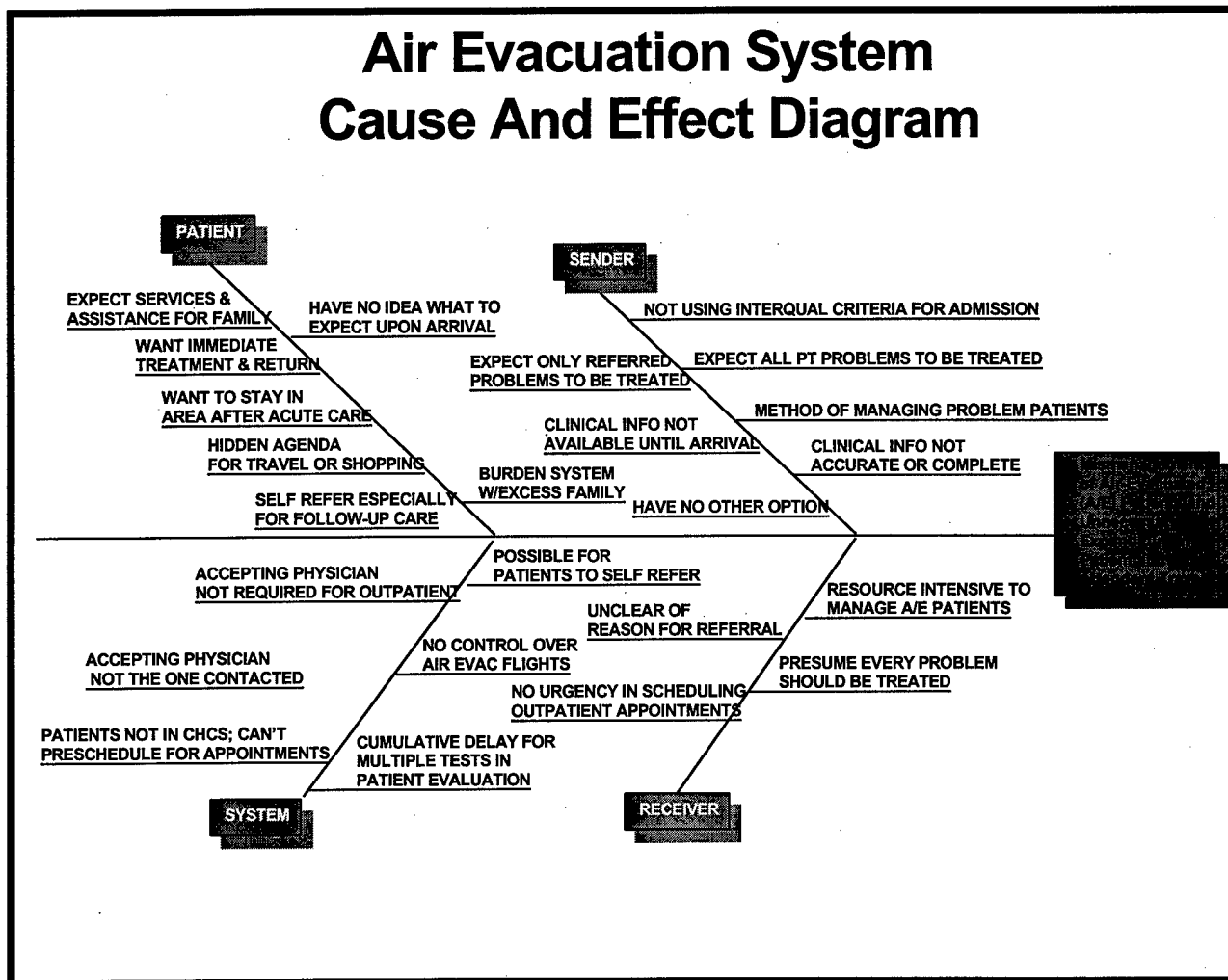


Figure 5. Cause and effect diagram showing issues and problems impacting on the aeromedical evacuation process.

The Composite Health Care System (CHCS), as shown as a system cause, is a DOD medical information program that serves as a repository data base for patients. According to the 121st General Hospital's Information Management Officer,

CHCS allows authorized credentialed providers to access and transfer patient information, such as laboratory and radiology results, and is also used to schedule appointments.

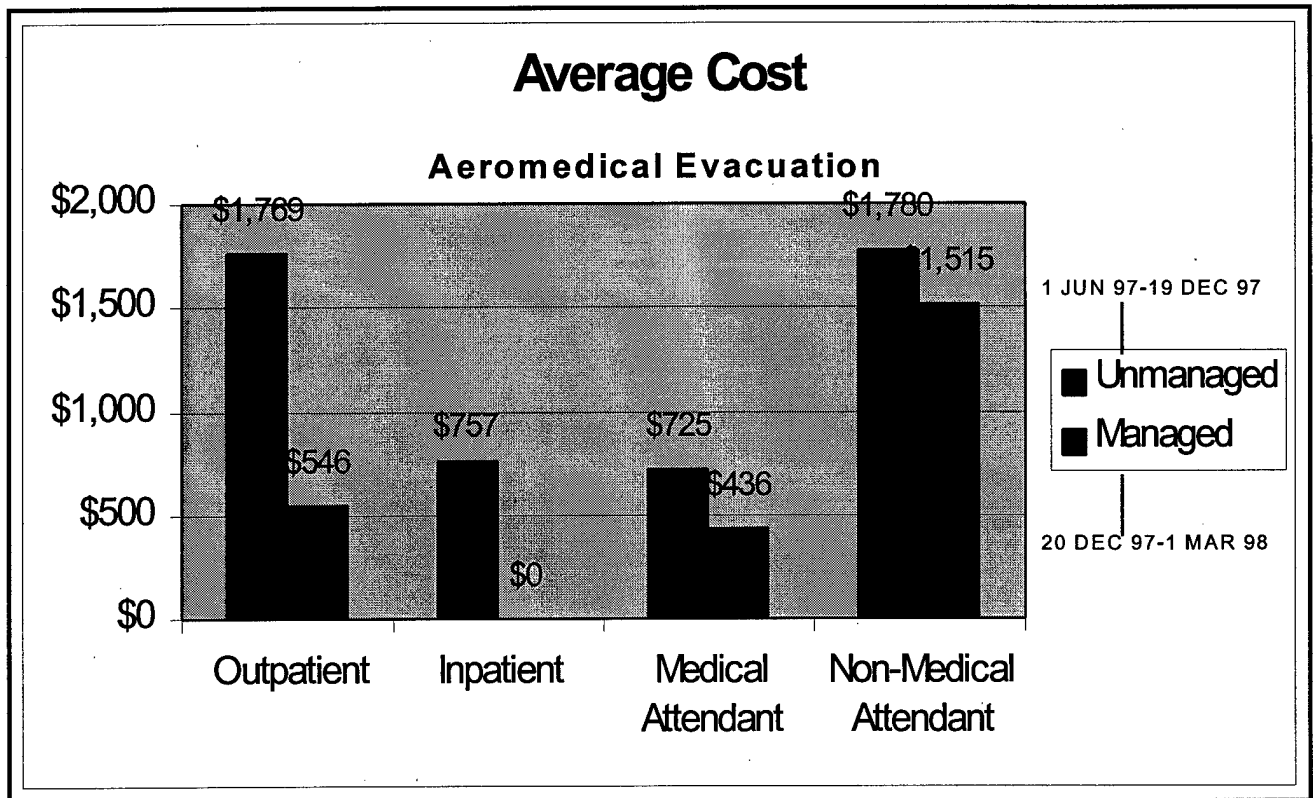


Figure 6. Aeromedical evacuation average costs before and after the implementation of case management.

Since case management was implemented for the aeromedical evacuation process in December 1997 at the 121st General Hospital, the average costs were only evaluated for two months. This shows that there has been a reduction in costs since it was implemented.

CHAPTER FOUR

DISCUSSION

The Assistant Secretary of Defense for Health Affairs as well as the U.S. Army Medical Command requires that UM plans be established to cover all aspects of patient care. This project allowed the author not only to collect data from the 121st General Hospital, but to obtain first hand interviews and observations from patients and key individuals involved with the aeromedical evacuation process throughout the Pacific region. After the entire process was evaluated, it was discovered that if the key elements of UM were implemented, it could result in definite improvements in the quality of care provided along with a substantial cost savings.

Flowcharting the process and developing the cause and effect diagram revealed major issues that need to be considered for improvement. These will be discussed as "Sender Issues" (issues at the 121st General Hospital), "Receiver Issues" (issues dealing with referral centers, primarily TRMC), "Patient and Attendant Issues" (patient and attendant related issues), and overall "System Issues" (those issues inherently related to the overall system).

SENDER ISSUES

The concurrent review along with interviews with 121st General Hospital health care providers (S. Lang and V. E. Walhgren, personal communication, November 14, 1997) and the 121st General Hospital Chief, Patient Administration Division (T. Green, personal communication, November 18, 1997) revealed that Interqual criteria were not being used appropriately to determine whether or not the patient should travel as an inpatient or an outpatient. Based on the interviews, healthcare providers admit or re-admit patients because, administratively, it is easier to get them into the aeromedical evacuation system, not because of Interqual criteria for admission. Also, many patients come to the 121st General Hospital from outlying units in Korea and it is much more convenient for them to remain inpatients while awaiting the aeromedical evacuation flight even though they do not meet Interqual criteria. In addition, patients who are aeromedically evacuated for a PEB or MEB have to be admitted as an inpatient according to the hospital aeromedical evacuation policy (Appendix A). Not only does this increase the readmission rate data for the hospital, but it places more costs on the 18th MEDCOM as opposed to the units. As shown in Table 2, the 18th MEDCOM bears the costs for active duty sent as inpatients even if their status is changed to outpatients at the referral center.

Normally, the units will pay for the active duty service members sent as outpatients.

Interviews with the Chief, Patient Administration at Tripler Regional Medical Center (G. Howard, personal communication, December 16, 1997) revealed that healthcare providers from the 121st General Hospital aeromedically evacuated patients with inaccurate or incomplete clinical information which made it difficult for the referral center to assess the patient completely. There was also a lack of coordination with accepting physicians leading to missing or unavailable clinical information, no scheduled appointments, and lengthened duration of stays.

According to the flowchart in Figure 2, decisions made by the providers at the 121st General Hospital can greatly effect the course of the aeromedical evacuation. This is where the initial decision for aeromedical evacuation begins. It must first be determined whether or not the appropriate care can be provided at the 121st General Hospital or to use other alternatives as mentioned previously. Not only must the clinical staff be educated on the aeromedical evacuation process, but they are the key to ensure that the patients and attendants are educated about the process and understand what to expect. The selection of the attendants (medical or non-medical) is made at this level which is a major "cost" decision. This decision for

selection of the medical attendant must include the needs of the patient, the skills required of the attendant, and the effect on staffing of the clinic or ward which will provide the attendant. Selecting the non-medical attendant also involves knowledge of the aeromedical evacuation policy and the needs of the patient. As shown earlier in Table 2, the 18th MEDCOM always pays for the attendant travel. The primary provider is responsible for the coordination and communication with the referral center, patient status (inpatient or outpatient), and other important decisions as outlined in the 121st General Hospital Aeromedical Evacuation policy (Appendix A). As shown in Table 3, functions of case management can facilitate the transfer, referral and discharge of patients by coordinating services.

The Patient Administration Division is also heavily involved with the process. It is the "hub" of administrative control for the aeromedical evacuation process. As shown in Figure 2, these personnel coordinate directly with the Air Force personnel at the JMRO in Japan who are in charge of scheduling the flights and manifesting the patients. They must serve as the liaison between the clinical staff, patients, attendants, referral sites and aeromedical evacuation personnel. It is important for them to develop a positive working relationship with other points of contact at referral sites and within the aeromedical evacuation

system to ensure the flow of communication and to proactively anticipate patient needs. They administratively process the patients through the system and must ensure each patient and attendant has the proper passports or visas needed for travel, travel orders, medications and clinical paperwork. A Patient Administration Representative accompanies the patients and attendants to Osan Air Force Base, about 30 miles south of Seoul, where the aeromedical evacuation flights depart. Patients and attendants must be aware of the itinerary and that uncertainties and unscheduled changes frequently occur in the system. They must be prepared for the financial responsibilities that may also arise. For example, if an inpatient is changed to an outpatient at the referral center, he or she will incur lodging and meal costs. The Patient Administration Division must also ensure proper travel orders are completed for patients and coordinate closely with the Clinical Support Division for the attendant travel orders. As Figure 2 indicates, the DCCS approves all aeromedical evacuation travel for patients and attendants.

As stated in the literature review, a clinical pathway is a comprehensive, multidisciplinary plan to coordinate, treat and monitor care for a patient population. It is a mechanism that guides the healthcare team to perform prescribed interventions. Table 4 shows that 40% of the

patients who are aeromedically evacuated from the 121st General Hospital are from internal medicine. The intensive care unit developed a clinical pathway (Appendix B) that demonstrates the multidisciplinary aspects of case management. This serves as an excellent example of how clinical pathways can be utilized in the aeromedical evacuation process.

One way to evaluate the effectiveness of UM is to measure the duration of stay. This includes the entire time that the patient and attendant are in the aeromedical evacuation system to include the time waiting for appointments or flights and actual travel time. According to the Chief of Management, 18th MEDCOM, the average duration of stay for patients and attendants is 6 to 8 days. If this time is reduced through improved coordination and communication, a greater cost savings will result.

After analyzing the entire aeromedical evacuation process, a decision briefing was provided to the Commander, 121st General Hospital. The hospital Commander decided to appoint the UM nurse as the case manager for patients who were aeromedically evacuated as well as working closely with the Tripler Regional Medical Center case manager. The command ensured that a hospital wide policy (Appendix A) was approved covering both administrative and clinical instructions. Developing the policy was a multidisciplinary

effort which represents a major direct outcome of this project. The Commander at Tripler Regional Medical Center, was also willing to dedicate resources to work closely with the referring medical treatment facilities (A. Ettipio, personal communication, November 9, 1997). This was an opportunity for the 121st General Hospital to proactively incorporate UM into the aeromedical evacuation process.

RECEIVER ISSUES

Based on interviews and personal communication with key individuals involved with the aeromedical evacuation process, the author determined issues affecting the process at the major referral center, TRMC. Figures 3 and 4 show the flowcharts of the process after the arrival in Hawaii at Hickham, Air Force Base. This is where both patients and attendants are met by the TRMC staff. The patient status determines whether or not the patient goes directly to TRMC (inpatient) or to the lodging facility (outpatient). Another critical factor is whether or not the patient has a pre-scheduled appointment and whether close coordination was accomplished with the receiving physician. According to the Tripler Regional Medical Center case manager (A. Ettipio, personal communication, December 15, 1997) and the Chief, Patient Administration Division

(G. Howard, personal communication, 15 December 1997) the process is clinically effective, yet very inefficient, costly, and poorly coordinated. It involves many different departments and personnel to include administrative and clinical. There is a tri-service Military Liaison Office that provides coordination especially for aeromedical evacuation patients and attendants. Problems exist throughout the process; especially noted is the lack of data collection, and the mismanagement and ineffective use of personnel. Patients were often not seen by the accepting physician, and the reason for the referral was unclear. The case manager also stated that medical problems other than the reason for referral were being treated, which led to longer duration of stays. There were no existing administrative or clinical processes to follow patients who were aeromedically evacuated to the receiving facility. No priority was given to expeditiously treat these patients and return them to Korea.

According to the Tripler Regional Medical Center case manager (A. Ettipio, personal communication, December 16, 1997), the medical center is implementing the following initiatives to correct these and other problems:

- begin data collection with the initial patient contact at Hickham, Air Force Base

- create a central data base for aeromedical evacuation patients that is updated daily
- ensure that Military Liaison Office personnel provide direct support for patients and attendants throughout the aeromedical evacuation duration of stay in Hawaii
- develop a policy that provides aeromedical evacuation patients with administrative priority for all diagnostic procedures and appointments to expedite their duration of stay
- ensure that appointments are made and appropriate travel orders are done before the patient leaves the referring hospital.

As these initiatives demonstrate, TRMC has recognized significant issues and problem areas in the aeromedical evacuation process, and is dedicating resources to work with the referring MTFs.

PATIENT AND ATTENDANT ISSUES

This analysis revealed many interesting issues that significantly impact on the aeromedical evacuation process. The author went through the process with patients and attendants which provided a real understanding of issues that they face. After interviewing several patients and attendants (personal communication, 12-17 December 1997), it

was found that they had no knowledge of what to expect while in the aeromedical evacuation system. Some problems that they encountered were not being financially prepared to pay for hotels, taxis or meals if they were changed to an outpatient status. Further interviews revealed that some would try to extend their stay by making additional appointments or delaying appointments. Several patients and attendants stated that they would take advantage of staying additional days in Hawaii by intentionally not seeking the information for return flights in the aeromedical evacuation system. Also, patients stated that there was no information provided to them by the aeromedical evacuation personnel. Others expected that all family members would be able to travel with them and had not made appropriate plans for the family members before they left Korea. Some patients admitted to making additional appointments for conditions other than which they were referred which extended their duration of stay at TRMC.

Many of the patient problems were due to a lack of understanding of the process or a lack of education from both the 121st General Hospital and the referral center. This led to a great deal of frustration which could be sensed from patients and attendants. By incorporating the key elements of UM into the process, many of these issues and problems would be resolved.

SYSTEM ISSUES

The author had the opportunity to meet with the Chief Nurse and the Chief of Operations at the 374th Aeromedical Evacuation Squadron, Yokota Air Force Base, Japan. This provided a macro view of the process and identified systemic issues and problems. Some problems are beyond the control of UM at the 121st General Hospital level. Examples of this are the lack of control over the aeromedical evacuation flights. According to the Chief of Operations (B. Cramer, personal communication, December 14, 1997) flights are often canceled, delayed or changed due to mechanical problems with the aging fleet of C-9 aircraft or route diversions due to weather or the need to transport a higher priority patient. It was suggested that the referring MTFs coordinate closely with the 374th AES in scheduling patients for aeromedical evacuation. By coordinating patient appointments with flight schedules, the duration of stay should be reduced, notwithstanding unplanned changes in the flight schedule (B. Cramer, personal communication, December 14, 1997). The Chief Nurse (C. Gardner, personal communication, December 14, 1997) stated that often times patient equipment, such as suction devices or oxygen sources, were not compatible with those used by the flight crew. Also, patients were sent with inappropriate amounts or types of medications or insufficient clinical documentation such as a medical

history. An administrative issue that surfaced was that patients and attendants sometimes did not have the appropriate travel documentation (passports, visas) for international travel which could cause significant delays and problems.

Another system problem is that the Composite Health Care System (CHCS) does not directly link the referral centers to the 121st General Hospital, so therefore, it is more difficult to preschedule appointments and reduce the effectiveness of sending and retrieving patient information among health care providers. The author addressed this with the Chief, Information Management Officer (F. Rowland, personal communication, 15 December, 1998) at Tripler Regional Medical Center and discovered that technologically it is possible to connect the CHCS between the 121st General Hospital and referral centers, however, other issues, such as security risks and patient confidentiality, have blocked this effort.

GENERAL

As Figure 5 shows, a multitude of issues result from the lack of formalized management of the aeromedical evacuation process. In some cases, patients were literally becoming "lost in the system". By incorporating the elements of UM into this process, it could be more efficient

which would result in cost savings and improved patient care. Goal number 2 of the 1998 Strategic Plan for the 121st General Hospital is to provide integrated health services. One of the objectives to accomplish this goal is to improve the case management of patients evacuated by intertheater aeromedical evacuation. The metric developed to monitor this is the duration of stay compared to historical trends and patient satisfaction (Strategic Plan, 1998).

It is evident that by the initiatives being implemented and the resources allocated by the 121st General Hospital and TRMC, that UM of the aeromedical evacuation process is a priority. In December 1997, the initial case management was incorporated into the process. The case managers from TRMC and the 121st General Hospital hold frequent conference calls to discuss and update the clinical and administrative status of all aeromedical evacuation patients and family members from Korea and prospective patients who are being scheduled for aeromedical evacuation (A. Ettipio, December 20, 1997). Figure 6 shows that average costs for patients and attendants were all reduced since case management was implemented at the 121st General Hospital in December 1997. Although this is only a small amount of time, it shows that there has been cost savings. The factors that account for this are a reduction in the duration of stay and sending patients as outpatients, as determined by Interqual

criteria, in which the travel costs were paid by the unit (M. Cook, personal communication, April 9, 1998). For example, the average costs for outpatients after case management was implemented were reduced by 70%.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

The 121st General Hospital is in the beginning stages of incorporating UM into the aeromedical evacuation process. The following recommendations will provide guidelines on how to further incorporate UM principles. Even though it has been found that there is cost savings (Figure 6), the real improvement should be seen in the quality of care for the patients. Communication and education are the keys to successfully incorporating UM. The case managers from the 121st General Hospital and TRMC, working together, have provided continuity in the process. Utilization review and proper discharge planning must continue. According to case manager reports from Tripler Regional Medical Center, there has been a dramatic improvement in overall patient experiences, both clinically and administratively, as a result of prior planning, scheduling and clinical information exchange (A. Ettipio, personal communication, February 28, 1998).

Utilization management in the aeromedical evacuation process demands a multidisciplinary approach and, in fact, cannot be successful without it. The 121st General Hospital is dedicated to providing the finest health care on the Korean peninsula and the aeromedical evacuation process is a

critical part of this care. The 121st General Hospital's Executive Committee has decided to allocate funds to hire a civilian case manager to provide the continuity required to run a successful program. The decision to do this was based on the findings reported in this project. By continuing to support UM efforts, the 121st General Hospital is well on its way to fully incorporating UM into the aeromedical evacuation process.

RECOMMENDATIONS FOR COMMAND

The command needs to strongly support mandatory education on the aeromedical evacuation process throughout the Korean peninsula. This is being offered during the Newcomer's Orientation, but needs to be reviewed with the appropriate personnel on an ongoing basis. This education needs to be routinely evaluated for its effectiveness. A representative from the 121st General Hospital should be sent to all regional aeromedical evacuation conferences. The command needs to reiterate the importance of establishing a CHCS link throughout the Pacific referral region and work closely with TRMC to ensure that it is done. The command must maintain full accountability for all aeromedical decisions made at the 121st General Hospital and be informed of the status of the aeromedical evacuation

process at all times. Additionally, funding and resources must continue to be allocated to UM.

RECOMMENDATIONS FOR CLINICAL PROVIDERS

Flowcharting the process revealed that the actual decisions and plans made by the clinician or primary care provider largely determines the success of the patient's aeromedical evacuation experience. Due to the different needs for different patients, specific aeromedical evacuation criteria should be developed by each clinical service. This could be in the form of clinical pathways as developed by the 121st General Hospital's intensive care unit and shown in Appendix B.

It is imperative to perform discharge planning when deciding to aeromedically evacuate patients. All alternatives to aeromedical evacuation should be considered, such as using supplemental care and receiving treatment in a Korean hospital. Discharge planning should begin when the patient is first seen by the provider. This should involve close coordination and consultation with case managers, the Patient Administration Division and the resource managers.

Patient needs, travel costs and time, and regulations must be considered when selecting the referral center and the attendants. The providers must ensure that patient appointments are made with an accepting physician at the

referral center and that these appointments correspond as closely as possible with the aeromedical evacuation flight times. Also, it is important that all paperwork is completed properly and all necessary equipment and medications are sent with the patients. Close coordination must be maintained with the Patient Administration Division at all times. The importance of the decisions made at the clinical level cannot be overstated.

RECOMMENDATIONS FOR PATIENT ADMINISTRATION DIVISION

The Patient Administration Division must ensure compliance with all regulations and policies and continually evaluate the overall effectiveness, efficiency and satisfaction with the aeromedical evacuation process. Routine data collection and reports should be generated and incorporated into the hospital UM and performance improvement programs. Education of staff, patients and attendants needs to be a priority with regular updates and evaluation tools in place. A checklist should be provided for each patient and attendant to screen for proper paperwork and documentation, medications and supplies, finances and other important items. Travel orders should be written for both inpatient and outpatient status, since inpatients are sometimes changed to outpatients at the referral center. Travel orders should also allow for return

on commercial flights in anticipation of long flight delays. A patient satisfaction questionnaire should be used to identify areas for improvement and to obtain input from patients. A central data base should be developed to track the status of all patients and attendants who are on aeromedical evacuation travel orders from the 121st General Hospital. This could be used to provide updates to unit commanders and as a data tracking tool. With proper and proactive administrative control, many of the common problems seen in the aeromedical evacuation process can be avoided.

RECOMMENDATIONS FOR RESOURCE MANAGEMENT

The involvement of Resource Management in the aeromedical evacuation process further demonstrates the multidisciplinary aspect of UM. Resource managers should be consulted concerning travel decisions and compliance with regulations and policies. They can develop monitors and establish benchmarks for aeromedical evacuation travel costs, site referrals, duration of stays, and attendant use along with computer generated models to determine the effect on staffing levels. Alternatives to aeromedical evacuation can also be evaluated for costs and appropriateness. All of this information can be used in a comprehensive UM program to fully analyze the effectiveness and efficiency of the

aeromedical evacuation process and to assist in decision making.

RECOMMENDATIONS FOR UTILIZATION MANAGEMENT

The case manager should serve as the vital link in the aeromedical evacuation process at the 121st General Hospital. All multidisciplinary aspects can be assimilated into a meaningful process to ensure the appropriateness of care and the cost effectiveness using the elements of UM. Utilization review based on costs, and duration of stay should be an integral part of the program. Tools to monitor and evaluate the quality of care, as well as costs, need to be developed and maintained so that outcomes and trends can be measured and tracked. The case manager is the critical connection between the clinical and administrative needs of the patient and should be actively involved in discharge planning.

As shown in this project, the aeromedical evacuation process involves many different sections and personnel. The case manager is needed to serve as the team leader to bring about change and to maintain oversight of the entire process, especially with involvement in both clinical and administrative environments. It would be extremely difficult to implement an effective UM program without a case manager monitoring the cost and quality of care of the

aeromedical evacuation process at the 121st General
Hospital.

APPENDIX A

121st General Hospital

Aeromedical Evacuation Policy

25 March 1998

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: 121st General Hospital Policy Number 6
Aeromedical Evacuation

1. **PURPOSE:** To delineate a policy for the transferring of patients from the 121st General Hospital to a Medical Treatment Facility (MTF) in Japan, Hawaii or CONUS (contiguous 48 states and the District of Columbia).

2. **APPLICABILITY:** This policy applies to all personnel assigned or attached to the 121st General Hospital.

3. **REFERENCES:**

a. Joint Commission on Accreditation of Healthcare Organizations, Accreditation Manual for Hospitals 1997.

b. 121st General Hospital Memorandum, Aeromedical Evacuation Briefing, 22 August 1996.

c. 121st General Hospital SOP, Handling of Urgent or Priority Air Evacuation, 16 August 1994.

d. 121st General Hospital Memorandum, Medical Evacuation of Critically Ill and Injured Patients, 2 June 1997.

e. 18th Medical Command Medical Command Medical Command Memorandum, Travel Related to Medical Care, May 1995.

4. **RESPONSIBILITIES:**

a. The Primary Physician will:

(1) Determine the need for aeromedical evacuation to another MTF resulting from various circumstances to include medically necessary treatment unavailable at the 121st General Hospital, requirement for a Medical Evaluation Board (MEB)/Physical Evaluation Board (PEB) or hospitalization beyond 60 days. Patients aeromedically evacuated for a MEB/PEB should be sent to the MTF closest to their home of record.

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(2) Consult with the chief of the service to verify the need for transfer.

(3) Contact the destination MTF and discuss the case with a physician at the receiving facility who will then become the accepting physician.

(4) Consult with the chief of the service to determine if a medical attendant is needed during the transfer process. They will also determine the number of required medical attendants, and qualifications for each of these attendants. Medical attendants may be physicians, RN's, LPN's, 91B's, psychiatry technicians, or respiratory technicians. Please note, advanced cardiac emergency nursing actions by an ACLS qualified RN or 91C must be directed by either a flight surgeon or attending physician. All intubated patients must be accompanied by a physician and respiratory technician or other qualified individual.

Coordination with the respiratory therapy service, if necessary, is the responsibility of the service chief. All psychiatric patients must be accompanied by a medical attendant of the same gender, if possible. Medical attendants will travel with the patient to the final destination.

(5) If the required medical attendant(s) is designated to be a physician, coordinate with the chief of the service to assign an appropriate individual to accompany the patient. If the medical attendant is someone other than a physician, the primary physician will notify the head nurse of the unit from which the patient will depart as to the need for a non-physician medical attendant(s).

(6) Determine whether the patient should be transferred on outpatient status or inpatient status. **All patients transferred for a MEB/PEB or who require a medical attendant will be sent on an inpatient status.**

(7) The primary physician will determine the priority ("urgent", "priority", or "routine") under which

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the patient will be transferred. All patients traveling on outpatient status should be classified as routine. Patients traveling on inpatient status can be classified as either "urgent", "priority" or "routine". "Urgent" patients are those requiring immediate transfer, "priority" patients are those requiring transfer within 24 hours, and "routine" patients are those who can wait for the next scheduled Air Force Aeromedical Evacuation.

(8) If a patient requires "urgent" evacuation, the primary physician must notify the medical evacuation office immediately so that they can coordinate a timely flight with the 374th Aeromedical Evacuation Squadron. If this scenario occurs during non-duty hours, the primary physician will notify the nursing chief who will then page the on-call medical evacuation NCO at beeper #1003. The medical evacuation NCO will then come into the hospital to expedite the transfer arrangements.

(9) Complete EAMC Form 396, Request for Aeromedical Evacuation and AF Form 3899, Aeromedical Evacuation Patient Record (enclosure 1 and 2, respectively) and submit these along with the transfer summary to the medical evacuation office. For "urgent" and "priority" patients, these forms will be submitted as soon as possible, but can be submitted up to four hours prior to the proposed air evacuation. For "routine" patients, these forms will be submitted no later than five duty days prior to the proposed air evacuation day for those going to Hawaii or Japan, or seven duty days for those going to CONUS.

(10) Dictate and sign a transfer summary detailing the condition of the patient and complete all appropriate portions of AF Form 3899. By signing the AF Form 3899, the physician is prescribing medications, treatments, special diets, etc. This becomes a legal document directing patient care while the patient is in the aeromedical evacuation system. All changes in the treatment plan must be annotated on the AF Form 3899 prior to departure.

(11) For "priority" and "routine" patients, use CHCS to order a 3 to 5 day (inpatients) or 5 to 7 day (outpatients) supply of all medications needed during
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SUBJECT: 121st General Hospital Policy Number 6
Aeromedical Evacuation

transfer no later than one duty day prior to the proposed air evacuation day. For "urgent" patients, this will be done as soon as possible, but no later than four hours prior to the proposed air evacuation.

(12) For "priority" and "routine" patients, notify the ward nursing staff of all medications, dressing changes, supplies, and special equipment such as monitoring devices, IV infusion pumps, oxygen tanks, etc. that will be needed during the transfer process no later than one duty day prior to the proposed air evacuation day. For "urgent" patients, this will be done as soon as possible but no later than four hours prior to the proposed air evacuation. The departing MTF is responsible for all required equipment and supplies that a patient may need for 3 to 7 days while traveling in the aeromedical evacuation system.

(13) Inform the medical evacuation office whether an air ambulance will be required for transport to Osan Air Force Base. This should be done as soon as possible prior to the proposed air evacuation.

(14) If slides are needed to accompany the patient, notify pathology one week prior to the aeromedical evacuation so that recuts can be made.

(15) Determine whether an "urgent" or "priority" patient is "critically ill or injured" thus requiring special considerations. If this is determined to be so, then further actions will be undertaken as detailed in Section e. (Critically ill or injured patients).

b. Nursing:

(1) The Clinical Nursing Chief on duty, in coordination with the head nurse of the unit from which a patient will be departing, will be responsible for authorizing and assigning appropriate individual(s) to serve as the medical attendant(s) if other than a physician. The medical attendant(s) must coordinate with the medical evacuation office about TDY orders as soon as he/she has received approval from the nursing chief.

(2) For "priority" and "routine" patients, the nursing staff will coordinate all necessary medicines, supplies, toiletries and equipment one day prior to the

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proposed air evacuation day. For "urgent" patients, this will be done as soon as possible prior to the proposed aeromedical evacuation. The nursing staff, in coordination with the Medical Evacuation Office, will be responsible for determining what equipment and supplies will be provided by the 374th Aeromedical Evacuation Squadron and what will be provided by the 121st General Hospital.

(3) Nursing Units are responsible for picking up prescribed medications for all in-patients. Nursing will perform the quality control check to ensure a 3 to 5 day supply is available for patients transferred as inpatients within the Pacific Region (Hawaii or Japan) and a 5 to 7 day supply for patients traveling as outpatients, or traveling as inpatients to CONUS destinations. The medications will be given to the medical attendant or the Medical Evacuation NCO, if no medical attendant is accompanying the flight, prior to departing from the unit. For inpatients not requiring medical attendants, the Medical Evacuation NCO will obtain all medications from the pharmacy and give them to the Aerovac Squadron Liaison upon arrival at Osan AB. Outpatients will be responsible for their own prescription medications.

(4) Controlled substances must be properly issued and documented. Remaining doses should be turned-in to the gaining MTF and not returned to the 121st General Hospital.

(5) The nursing staff will provide the medical attendant with an evacuation supply kit (see enclosure 3 for basic supply list). The exact contents of the kit will be determined by the physician and the nursing staff based on the diagnosis and current patient care requirements.

(6) Please note: Advanced cardiac emergency nursing actions by an ACLS qualified RN or 91C must be directed by either a flight surgeon or attending physician.

(7) The nursing staff will review the contents of the supply kit with the primary physician and all medical attendants no later than one day prior to the proposed aeromedical evacuation day for "priority" and "routine" patients, and no later than four hours prior to the proposed aeromedical evacuation for "urgent" patients. Additions to

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the minimum supply kit will be at the discretion of the primary physician on a case-by-case basis. Evacuation supply kits are located in the ICU.

(8) For any patient requiring oxygen during transfer, the ward nursing staff will ensure that three full oxygen cylinders (3,000 psi E cylinders) with appropriate regulator and aluminum wrench are available from the time of departure from the ward to the arrival time onto the Air Force Aeromedical Evacuation aircraft. This number of cylinders includes those already on the air ambulance, but the 121st General Hospital may need to supplement these as necessary. All oxygen cylinders must be checked by a respiratory technician for capacity and usability prior to departure from the 121st General Hospital.

(9) The charge nurse must ensure that AF Form 3899, Block 21 (pre-flight vital signs) is filled-out prior to the patient's departure from the unit. Block 22 (brief narrative) is filled out by the attending physician and Block 23 (assessment/progress) is filled out by the medical attendant in order to document pertinent information throughout the aeromedical evacuation. The charge nurse will also ensure that a brief statement of the patient's current condition at time of departure is included in Block 23.

c. The Pharmacy Section.

(1) The Outpatient Pharmacy is responsible for ensuring all prescriptions (other than IV additives) are dispensed in sufficient quantities to supply the number of days in the transition until the patient arrives at the final destination.

(2) The pharmacy will dispense a 3 to 5 day supply for inpatients transferred within the Pacific Region (Hawaii or Japan) and 5 to 7 day supply for all outpatients, or inpatients traveling to a CONUS destination. Exact amounts of medications, including IV solutions, will be determined by the pharmacist, in coordination with the attending physician. All aeromedical evacuation medications must be recorded in the pharmacy air evacuation logbook. The Inpatient Pharmacy is responsible for all IV additives with sufficient quantities as described above.

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(3) In the case of an urgent aeromedical evacuation, a physician order must be written for the patient no later than 4 hours prior to the departure time. All other physician orders must be considered routine and sent to the pharmacy 24 hours in advance. The physician must enter at the comment field of CHCS or written prescription, "Aeromedical Evacuation to TAMC or CONUS". Prescriptions for IV additives must be hand-written on a prescription pad and turned into the Inpatient Pharmacy. To ensure the correct amount of medications are provided, pharmacy should always verify where the patient is being aeromedically evacuated to at the time of receiving the prescription order.

(4) The Department of Pharmacy (both inpatient and outpatient sections) will obtain a weekly list from PAD of patients being aeromedically evacuated. Pharmacy should double-check with PAD if a list is not provided each week.

(5) Medications must be checked against the pharmacy aeromedical evacuation logbook by a nursing staff member upon pick-up. A nursing staff member must sign the pharmacy logbook before any medications are released. For inpatients, a nurse from the respective unit must pick-up the medication from the outpatient pharmacy during weekdays, or inpatient pharmacy on weekends and holidays. IV additives will be dispensed from the inpatient area.

(6) Controlled substances prescribed for aeromedical evacuation must be secured in the pharmacy vault until signed-out and released to the appropriate medical attendant prior to departure.

d. The Medical Evacuation Office will:

(1) Submit EAMC Form 396 and AF Form 3899 to the Deputy Commander for Clinical Services (DCCS) for approval.

(2) When DCCS approval is obtained, submit AF Form 3899 to the 121st General Hospital Case Manager to ensure completeness of the form. Also, contact the 374th Aeromedical Evacuation Squadron at Yokota Air Force Base at DSN 225-4700/7660 to relay general information, urgency

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category and special requirements of the patient during transfer. A request for special medical equipment should be made at this time, in coordination with the nursing and medical staffs.

(3) In the event of a required "urgent" aeromedical evacuation, coordinate with the 374th Aeromedical Evacuation Squadron to arrange the most expeditious flight possible. The medical evacuation NCO on-call will come into the hospital during non-duty hours to accomplish this task if necessary.

(4) Active duty soldiers do not require a passport. Civilian patients do require a passport or visa. If the patient and/ or escort does not have a current passport or visa, contact the United States Embassy duty officer at DSN 721-4110 to clear emergency visas and passports.

(5) Prepare request for orders (RFO) or travel orders for all patients and non-medical attendants. If these orders are required after normal duty hours due to an "urgent" aeromedical evacuation, the Clinical Nursing Chief will page the medical evacuation NCO on-call to facilitate this process. If the travel orders cannot be completed in time for the flight, then the medical evacuation office will fax the orders to the destination facility as soon as possible after the anticipated arrival time. Medical attendant's orders are prepared by the Clinical Support Division.

(6) Medical Attendants must return on the next available AMC flight. If an AMC flight is not available within the next 72 hours, the attendant must take the next available commercial flight to return to duty. The medical attendant is responsible for contacting the aeromedical evacuation office liaison at the MTF in order to coordinate return travel. Exceptions to this must be approved by the medical attendant's supervisor and authorized by appropriate leave or TDY extension orders.

(7) Assemble all requested medical records and radiographic studies or copies. Ensure these accompany the patient during the transfer process. The original inpatient

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record is maintained at the 121st General Hospital and is never dispatched with the patient.

(8) Procure a cellular phone and a select list of phone numbers (121st Emergency Medicine Services at DSN 737-6001 or Commercial 7917-6001, ICU at DSN 737-5068 or Commercial 7917-5068, Osan Emergency Room at DSN 784-2500 or Commercial 0333-661-2500, 374th Aeromedical Evacuation Squadron at DSN 225-4700, Aju Medical Center Emergency Department at Commercial 0331-219-6001) to be given to the senior medical attendant on all medical evacuations requiring medical attendants. The cellular phone will be returned to the 121st General Hospital after delivery of the patient onboard the Air Force medical evacuation flight.

(9) The highest-ranking physician among the medical attendants will be designated as the senior medical attendant. If no physician is present, then the highest-ranking nurse will be designated as the senior medical attendant. If no physician or nurse is present, then the highest-ranking NCO among the medical attendants will be designated as the senior medical attendant.

(10) Prepare patient baggage tags (DD Form 600) for all patients and tag all baggage.

(11) Make arrangements for travel to Osan Air Force Base. If an air ambulance has been requested, the medical evacuation office will call the 377th Air Ambulance Company at Camp Humphreys to make appropriate arrangements for transport. Coordinate with both air and ground ambulance sections at the 121st General Hospital if additional patient transportation is required.

(12) Accompany the ground transport to Osan Air Force Base to act as liaison to the Air Force.

(13) Ensure patients/attendants have their medications prior to departure from the 121st General Hospital.

(14) All equipment belonging to the 121st General Hospital and not required on the air evacuation plane will be returned to the 121st General Hospital via the ground ambulance (if available) or the medical evacuation bus.

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e. Critically Ill or Injured Patients: If the primary physician determines that a patient who will enter the aeromedical evacuation system is "critically ill or injured," the following additional steps will be taken:

(1) The head nurse of the ICU will convene a formal multidisciplinary meeting 24 to 48 hours prior to the proposed flight or as soon as possible if the flight has been scheduled on a more urgent basis. Members present should include the primary physician, all medical attendants, a representative from the medical evacuation office, a representative from pharmacy, a representative from respiratory therapy and the aeromedical evacuation case manager.

(2) Specific issues that should be addressed at this meeting should include personnel requirements; timing of the air ambulance and Air Force flight; transportation requirements during each phase of the transfer process, coordination among the ICU, air ambulance, Osan Emergency Room and the 374th Aeromedical Evacuation Squadron; equipment and supplies that will be needed; required routine and emergent medicines; and contingency plans in the event of an emergency.

(3) The medical evacuation office will call the 374th Aeromedical Evacuation Squadron four hours prior to the anticipated departure time of the aeromedical evacuation flight from Osan AFB to verify the scheduling. The medical evacuation office will then notify the ICU nursing staff of this confirmed time.

(4) The medical evacuation office will call the 377th Air Ambulance Company to coordinate the arrival time at the 121st General Hospital that is approximately one hour prior to the anticipated departure time of the Air Force flight from Osan AFB.

(5) The medical evacuation office must immediately notify the ICU nursing staff of any changes in the timing of the air ambulance or the Air Force flight. The ICU nursing staff will then notify the primary physician and medical attendants of these changes.

(6) The ICU nursing staff will receive

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notification from the 374th Aeromedical Evacuation Squadron as soon as the aeromedical evacuation plane has actually landed at Osan AFB. Only then will the patient be physically discharged from the 121st General Hospital.

(7) The ICU nursing staff will notify the Osan Emergency Room as soon as the patient has left the 121st General Hospital so that the Osan Emergency Room can coordinate a ground ambulance to meet the air ambulance without any unnecessary delay.

f. Eligibility Criteria for Medical Evacuation:

(1) Active duty soldiers traveling:

(a) On outpatient status will have travel and per diem costs funded by the unit to which they are assigned.

(b) As non-medical attendants, as inpatients, or as medical attendants, will have travel and per diem costs funded by the 18th Medical Command.

(2) Dependents of active duty soldiers traveling in outpatient status, inpatient status or as non-medical attendants will have travel and per diem costs funded by the 18th Medical Command.

(3) Retirees or dependents of retirees traveling as outpatients, inpatients or attendants are not entitled to funding for travel or per diem. However, they may be transported on a space-required basis aboard government transportation.

(4) For stays exceeding the number of authorized TDY days by an individual (whether a patient or an attendant) who is eligible for per diem funding, a competent medical authority at the recipient MTF must send a memorandum to the Aeromedical Evacuation Office justifying the extended stay. Per diem will be granted for this extended period if approved by Resource Management based on this memorandum.

(5) If an Air Force aeromedical evacuation flight is

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not available for a return flight in the required time period, then the next option will be an AMC flight. If an AMC flight is not available within 72 hours, then a commercial flight will be utilized. Only active duty soldiers and their dependents are authorized funding for commercial flights at government expense, however, this must be noted in their orders. **The point of contact for any return flight issues is the aeromedical evacuation office liaison at the MTF.**

5. The proponent for this policy is the Continuum of Care Functional Management Team.

6. This policy supersedes the policy by the same name and number dated 15 November 1997. The previous edition should be destroyed.

FOR THE COMMANDER

SIGNED

3 Encls (NOT ENCLOSED)

1. EAMC Form 396
2. AF Form 3899
3. Air Evacuation Basic
Supply List

DONALD E. HENDERSON
LTC, MS
Executive Officer

APPENDIX B

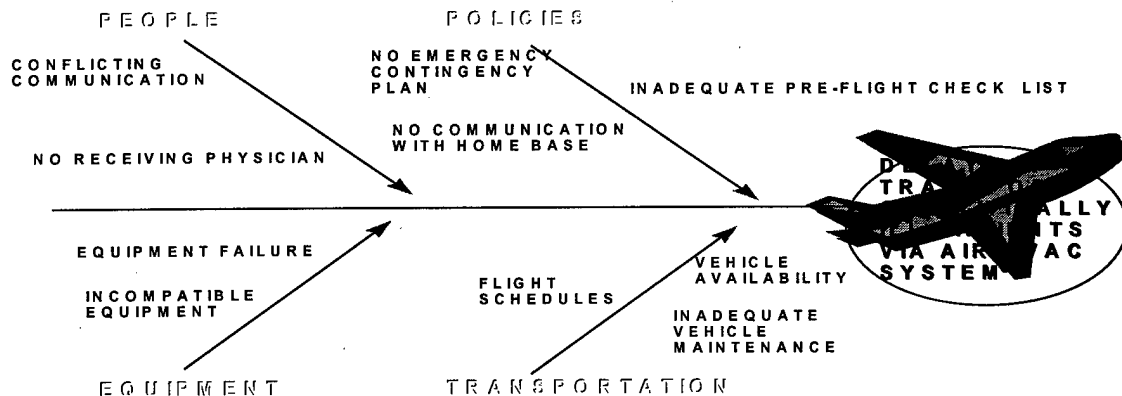
Clinical Pathway

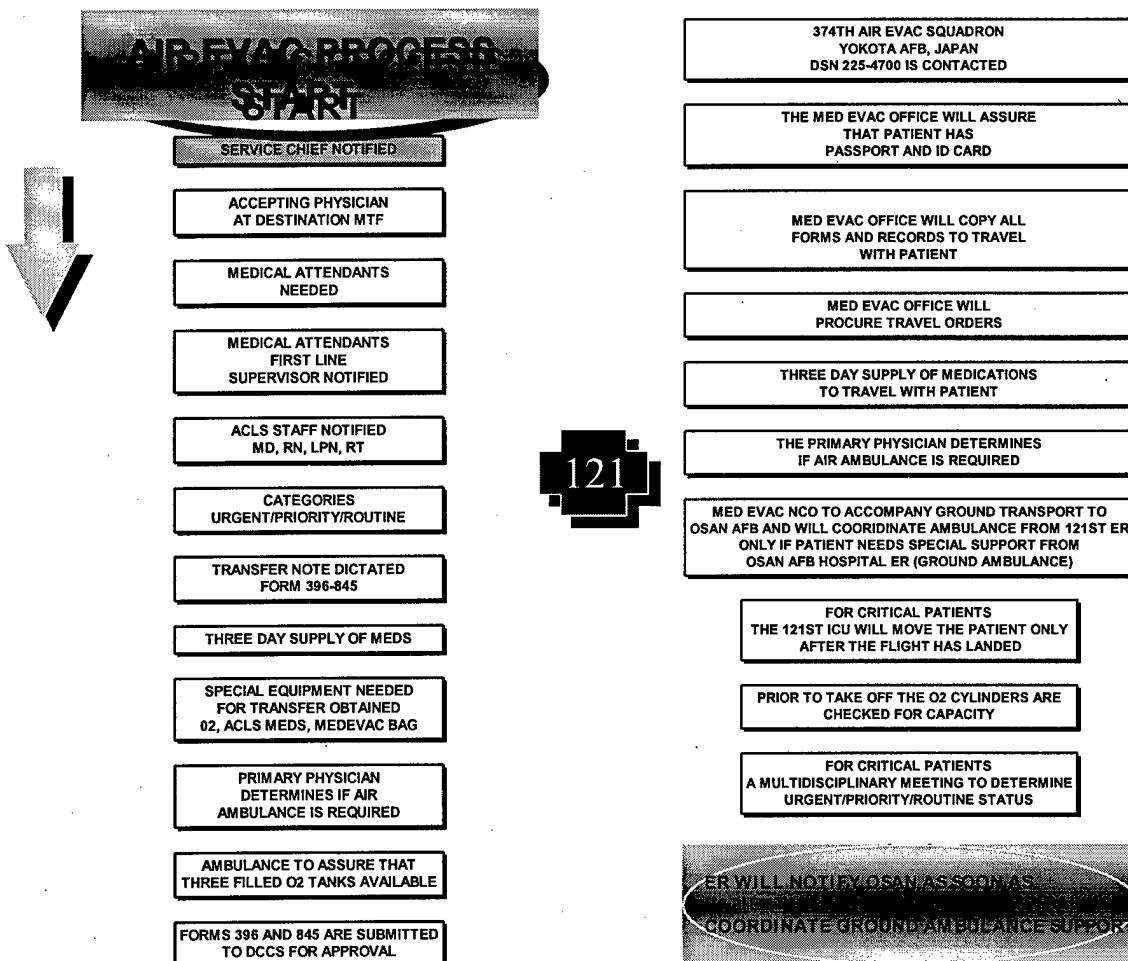
IMPROVING THE TRANSPORT OF CRITICAL PATIENTS VIA THE AIR EVAC SYSTEM

The Problems:

- **DELAYS IN TRANSPORTING CRITICAL PATIENTS VIA THE AEROMEDICAL EVACUATION SYSTEM**
- **EXTENDED PERIODS OF WAITING TIME**
- **INADEQUATE AND INCOMPATIBLE EQUIPMENT AVAILABLE**
- **INCONSISTENT COMMUNICATION BETWEEN AIR FORCE, ARMY, AND RECEIVING MTF**

IDENTIFY POSSIBLE CAUSES





REFERENCES

- 121st General Hospital. 1998. Strategic Plan.
- Aeromedical Evacuation Policy Number 6. 1998. 121st General Hospital.
- Air Force Instruction 41-301. 1996. Worldwide Aeromedical Evacuation System.
- Bailit, H.L. and Sennett, C. 1991. Utilization management as a cost-containment strategy. Health Care Financing Review, Annual Supplement: 87-92.
- Croegaert, C., Azcueta, C., Witkin M. 1995. Utilization management, its history and its future. Surgical Services Management, 1(4): 227-30.
- Department of Defense Utilization Management Policy for the Direct Care System. 1996.
- Feldstein, P.J., Wickizer, T.M., and Wheeler, J.R. 1988. The effects of utilization review programs on health care use and expenditures. The New England Journal of Medicine 318(20): 1310-14.
- Garbin, B.A. 1995. Introduction to clinical pathways. Journal of Healthcare Quality, 17(6): 6-8.
- Grant, P.H., Campbell, L.L., Gauntney, L.J. 1995. Implementing case management and developing clinical pathways. Journal of Healthcare Quarterly, 17(6):10-16.
- Goldstein, L.S. 1990. Linking utilization management with quality improvement. Psychiatric Clinics of North America, 13(1): 157-168.
- Hamilton, M. 1995. Combining utilization management and discharge planning. Journal for Healthcare Quality, 17(4): 7-10.
- Harris, J.M. 1996. Disease Management: New wine in new bottles? Annals of Internal Medicine, 124: 838-842.
- Interqual, Inc., Introduction to Utilization Review. 1994. North Hampton, NH: Author.

Jacobs, C.M. and Lamprey, J. 1997. Interqual SI/IS. North Hampton, NJ: Interqual, Inc.

Joint Commission on Accreditation of Healthcare Organizations, Accreditation Manual for Hospitals. 1998. Oakbrook Terrace, IL: 116-118.

Khandker, R.K. and Manning, W.G. 1992. The impact of utilization review on costs and utilization. Health Economics Worldwide, 1:47-62.

Memorandum, 18th Medical Command, Resource Management. 1995. Travel related to medical care.

Quick, B. 1994. Integrating case management and utilization management. Nursing Management, 25(11): 52-56.

Ritchie, C.E., Morse, J.H., Brewer, P.G. 1996. Surviving the "Air Evac": Medical and Logistical Issues of Evacuating Psychiatric Patients by Air from Korea to the United States. Military Medicine, 161(5): 298-302.

Schwarz, T. 1994. Continuous Quality Improvement and the utilization management process. Medical Interface, 7(8): 77-85.

Smith, R.B. and Gotowka, T.D. 1991. Onsite Concurrent Review: Impacts on utilization, medical complications and expense. Benefits Quarterly, 7(4): 82-90.

Sprouse, M.W. and Whitmore, B.C. 1995. Developing a hospital policy for clinical pathways. Journal for Healthcare Quality, 17(6): 40-46.

Tan, J.K.H., McCormick, E., Sheps, S.B. 1993. Utilization care plans and effective patient data management. Hospital and Health Services Administration, 38(1): 81-97.

Tischler, G.L. 1990. Utilization management and the quality of care. Hospital and Community Psychiatry, 41(10): 1099-1102.

Trentalance, A.E. 1995. Utilization management, case management, and you. Physician Executive, 21(4): 25-27.

United States Forces Korea Booklet 1997. Section III, Organization, 79.